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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/589,762

08/17/2006

Jun Yamada

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EXAMINER

NELSON, MICHAEL B

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

08/19/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/589,762	Applicant(s) YAMADA ET AL.	
	Examiner MICHAEL B. NELSON	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 9-14 is/are pending in the application.
- 4a) Of the above claim(s) 6-8 and 15-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 9-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>03/08/07; 08/17/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's response filed 05/29/08 has been entered. The election, with traverse, of Group I, claims 1-5 and 9-14 is acknowledged, claims 6-8 and 15-17 are withdrawn as being directed to non-elected subject matter. The applicant argues in his traverse that there is no undue burden in examining Groups III and I. This argument has been considered, but not found persuasive. MPEP § 808.02 recites that for the purposes of the initial requirement of a restriction, a serious burden on the examiner may be prima facie shown if the examiner shows by appropriate explanation either separate classification, separate status in the art, or a different field of search as defined in MPEP § 808.02. Since the Examiner has shown a different classification for the two groups of claims, a burden for examining both groups has been shown.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-3 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toyobo Co Ltd (JP 07100201), see Schreiber Translation Inc. English Translation (NPL Document U), with evidentiary support from Deshpande et al. (U.S. 2003/0215644).

Regarding claims 1 and 9, Toyobo Co Ltd discloses a porous membrane ([0004]), with a thickness of between 5 and 100 micrometers ([0013]), and a viscosity of greater than 0.5 dl/g ([0010], L16-19) with instant chemical formula (I) ([0010]) being present at more than 20mol% ([0010], L6). Toyobo Co Ltd is silent as to the glass transition temperature of the polyamideimide resin used in the porous membrane, however, one having ordinary skill in the art would have adjusted, through routine experimentation, the glass transition temperature of the resin in order to optimize the rheological and mechanical properties of the final membrane. Toyobo Co Ltd is also silent as to amide/imide bond ratio (recited in instant claim 9), however, it

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was known to those having ordinary skill in the art at the time of the invention that the ratio of amide to imide bonds in a polyamide imide resin affects the moisture stability of the final product (See Deshpande et al., [0054], for evidence of controllability of imide/amide ratio, and [0073], for the corresponding effect on moisture stability). Hence, one having ordinary skill would have adjusted, through routine experimentation, the amide/imide bond ratio in order to optimize the moisture stability of the final product.

Regarding claims 2-3 and 10-12, Toyobo Co Ltd. discloses all of the limitations as set forth above. Additionally, the reference discloses the membrane alone and with no other layers (i.e. a monolayer). Toyobo Co Ltd also discloses that the polyamide imide resin comprises an acid component including dimer acid ([0011]) and biphenyltetracarboxylic acid anhydride ([0006]).

6. Claims 1, 4, 5, 9, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinohara et al. (U.S. 2002/0055036) in view of Toyobo Co Ltd (JP 07100201), see Schreiber Translation Inc. English Translation (NPL Document U), with evidentiary support from Deshpande et al. (U.S. 2003/0215644), as applied to claims 1 and 9 above.

Shinohara et al. discloses a battery separator membrane for lithium ion batteries ([0004]), in which a “shut-down layer” of polyolefin ([0016]) is combined with a heat-resistant porous layer of, inter alia, polyamideimide resin ([0018]). The gas permeability of the battery membrane separator is disclosed as being 700 sec/100 cc, which lies within in the instant claimed

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range. Shinohara does not disclose specific polyamideimide materials. Therefore, one of ordinary skill in the polymer film arts would look to other references to find a useful polyamide imide resin. The overall invention of Shinohara et al. is directed towards utilizing heat resistant porous membranes in a field where resistance to heat deformability is problematic ([0005]).

The porous polyamideimide membrane of Toyobo Co Ltd is disclosed as being designed to be particularly heat resistant (Page 5, L1-6 and Page 6, [0003]) and therefore, because the inventions of both Toyobo Co Ltd and Shinohara et al. are drawn to the field of porous polyamideimide membranes it would have been obvious to one having ordinary skill in the art at the time of the invention to have used the polyamide imide composition of Toyobo Co Ltd. in the separator of Shinohara et al. in order to obtain an appropriate porous, heat-resistant, polyamide imide resin for a battery separator.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL B. NELSON whose telephone number is (571) 270-3877. The examiner can normally be reached on Monday through Thursday 6AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MN/

07/21/08

/Carol Chaney/

Supervisory Patent Examiner, Art Unit 1794